

Advances In **The Canine Cranial Cruciate Ligament**

Advances In **The Canine Cranial Cruciate Ligament**

Second Edition

Edited by

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Dedication

This book is dedicated to Susannah Sample, to my family, and to all of my colleagues who have contributed effort to advancing the understanding of canine cruciate ligament rupture, and the treatment of affected dogs.

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About the Editor

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Diplomate of the American College of Veterinary Surgeons in 1995. After periods on faculty at the University of California, Davis and the Royal Veterinary College, University of London, he returned to Madison as a faculty member, where he is currently the Melita Grunow Family Professor of Companion Animal Health. He has authored many peer-reviewed publications on stifle osteoarthritis and cruciate ligament rupture and speaks regularly at international meetings on this work.

Foreword to the Second Edition

The popularity and success of the First Edition of this authoritative collection of work on canine cranial cruciate ligament rupture has been an impetus to launch a thoroughly revised new, Second Edition. This move is easily justifiable considering the immense clinical importance of this disease in small animal clinical practice, and also the numerous advances that have been made in knowledge about the problem in the last few years. The appeal of this book to the busy clinician is that all the latest developments are assembled under one umbrella in this volume. The editor of this volume, Dr Peter Muir, has arranged and organized the various chapters in a coherent manner that takes the reader from the basics of the disease pathophysiology, through the essence of diagnosis and treatment options, to a view of the future.

As is generally the case in science, the ever-increasing body of knowledge has really served to expose the apparently growing complexity of the problem of canine cruciate ligament rupture. To achieve the best possible outcome for each and every dog presented with this problem, it is no longer acceptable to have just

one standard surgical treatment that we use in every case. We must be even more meticulous in objectively assessing each patient, and consider how we manage concurrent problems such as meniscal injury or patellar luxation. Also, advanced imaging is assuming an increasingly useful role in detecting variability in skeletal and articular morphology that can require modification in surgical technique. Furthermore, the development of dynamic imaging has allowed us to learn more about motion of the cruciate-deficient stifle during ambulation and full weight-bearing, before and after surgery. These are very exciting developments that we need to carefully and critically evaluate, and embrace as appropriate.

Dr Muir and all the contributing authors are warmly congratulated on the production of this new edition. However, as I previously foreshadowed in my foreword to the First Edition, I do suspect that in another few years, we will again be ready for yet another new edition!

Kenneth A. Johnson
Sydney, Australia

Foreword

The American College of Veterinary Surgeons Foundation is excited to present the Second Edition of *Advances in the Canine Cranial Cruciate Ligament* in the book series entitled *Advances in Veterinary Surgery*. The American College of Veterinary Surgeons (ACVS) Foundation is an independently chartered philanthropic organization devoted to advancing the charitable, educational and scientific goals of the ACVS. Founded in 1965, the ACVS sets the standards for the specialty of veterinary surgery. The ACVS, which is approved by the American Veterinary Medical Association, administers the board certification process for Diplomates in veterinary surgery and advances veterinary surgery and education. One of the principle goals of the ACVS Foundation is to foster the advancement of the art and science of veterinary surgery. The Foundation achieves these goals by: supporting investigations in the diagnosis and treatment of surgical diseases; increasing educational opportunities for surgeons, surgical residents and veterinary practitioners; improving the surgical training of residents and veterinary students;

and bettering animal patients' care, treatment, and welfare. This collaboration with Wiley-Blackwell will benefit all who are interested in veterinary surgery by presenting the latest evidence-based information on a particular surgical topic.

Advances in the Canine Cranial Cruciate Ligament is edited by Dr Peter Muir, who is well recognized as an expert in this field. He has chosen a group of strong contributing authors to detail the areas of structure and function, etiopathogenesis, clinical features, surgical and medical management, and postoperative care and rehabilitation. We are sure you will find this reference extremely valuable.

The ACVS Foundation is proud to partner with Wiley-Blackwell in this important series, and is honored to present this newest book in the *Advances in Veterinary Surgery* series.

R. Randy Basinger
Chair, Board of Trustees
ACVS Foundation

Preface

Although cruciate ligament rupture has been recognized clinically in dogs for more than 50 years, research into this condition has largely focused on the development of methods for surgical treatment of the unstable stifle, and not the disease mechanism. Cruciate ligament rupture is one of the most common reasons that dogs are presented to veterinarians for the treatment of lameness. It has been a long-held clinical belief that the disease mechanism for cruciate ligament rupture in dogs is similar to that for anterior cruciate ligament rupture in human beings. Over the past 10 years there has been increasing recognition that second ruptures are common in both human beings and dogs. Historically, the dog has been a common animal model for research into the surgical treatment of anterior cruciate ligament rupture. Transection of the cranial cruciate ligament in experimental dogs has also been a common ani-

mal model for biomedical research studies of osteoarthritis.

During the past 15 years, an increasing body of work investigating the disease mechanism for cruciate ligament rupture has been published. Cruciate ligament rupture in the dog is a complex trait, with genetic and environmental factors contributing to disease risk. This research is challenging established views about what causes cruciate ligament rupture and how affected dogs should be managed clinically. My goals for the Second Edition of this book were to produce a text that summarizes state of the art knowledge about cruciate ligament rupture in the dog, including recent advances in the past 5 years, to provide a useful reference for a broad audience, and to highlight areas for development of future work in this field.

Peter Muir

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Peter Muir

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